



#26
R. Houston
3/31/95

PATENTS
LT-5 REISSUE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR REISSUE
OF U.S. PATENT 4,823,070

Date of Issue : April 18, 1989
Inventor : Carl T. Nelson
Title : SWITCHING VOLTAGE REGULATOR CIRCUIT
Assignee : Linear Technology Corporation
Reissue Serial No. : 07/683,549
Reissue Filing Date : April 10, 1991
Examiner : Kristine L. Peckman
Group Art Unit : 2102

March 9, 1995

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, applicants, through their attorney, hereby make the patents and other documents listed hereinbelow of record in the above-identified patent application for reissue.

These patents and other documents were previously made of record in a related application, Serial No. 932,014, which issued as patent No. 4,755,741 on July 5, 1988 and/or present in one or more of three subsequent reexaminations of that patent (two of which reexaminations are still pending in a merged proceeding). The present application for reissue is related to these other applications, in that patent No. 4,823,070, which is the subject of the reissue application, incorporates the disclosure of patent No. 4,755,741 by reference (see column 5, line 8-13).

For the convenience of the Examiner, the references have been listed on the following pages, and grouped according to the case in which they were originally cited.

Documents of record in Application Serial No. 932,014:

United States Patents

4,228,404	Widlar	10/1980
4,595,974	Lethellier	6/1986
4,564,769	Melamed	1/1986
4,645,945	de Sarte	2/1987

Other Documents

Preliminary Data Sheet, "LT1070 5A High Efficiency Switching Regulator," Linear Technology Corporation, 1986, pp. 10-14 to 10-17.

Nelson, Carl, "Switching Controller Chip Handles 100W from a 5-Pin Package," Electronic Design, Dec. 1985, pp. 73-78.

Data Sheet, "LM117/LM217/LM317 3-Terminal Adjustable Regulator," National Semiconductor Corporation Linear Databook, 1982, pp. 1-23 to 1-30.

Application Note AN-110, "Fast IC Power Transistor with Thermal Protection," National Semiconductor Corporation, May 1974, pp. AN110-1 to AN110-6.

Data Sheet, "LT1005M/LT1005C Logic Controlled Regulator," Linear Technology Corporation, Linear Databook, 1985, pp. 259-270.

Data Sheet, "LT1001 Precision Operational Amplifier," Linear Technology Corporation, Linear Databook, 1985, pp. 24-35.

Knickmeyer, K. H., "Dynamic Transistor Antisaturation Control," IBM Technical Disclosure Bulletin, Vol. 17, No. 4, September 1974, pp. 1091-1092.

Documents of record in Reexam Serial No. 90/002,035:

United States Patent

4,727,264	Neidorff	2/1988
3,105,158	Nichols	9/1963
3,534,281	Hillhouse	10/1970
3,569,742	Schroeder	3/1971
3,641,369	Wallingford	2/1972
3,845,405	Leidich	10/1974
4,028,561	Black et al.	6/1977
4,031,416	Peil	6/1977
4,164,747	Gerstner	8/1979
4,426,590	Rischmuller	1/1984
4,461,960	Yasunaga	7/1984
4,542,399	Monticelli	9/1985

Other Documents

Collector Diffusion Isolation - A New Bipolar Process for Integrated Circuits, 2nd Edition, October 1972, pp. 4-31.

Volume III of the Proceedings of Powercon 3: Third National Solid State Power Conversion Conference, June 1976, pp. E3-1 to E3-7.

Data Sheet, "LM101A/LM301A, LM107/LM307 Operational Amplifiers," Linear Technology Corporation Linear Databook, 1986, pp. 2-177 to 2-182.

Data Sheet, "LM119/LM219/LM319 High Speed Dual Comparator," National Semiconductor Corporation Linear Databook, 1982, pp. 5-22 to 5-26.

Data Sheet, "LM111/LM211 Voltage Comparator," National Semiconductor Corporation Linear Databook, 1982, pp. 5-16 to 5-21.

Dobkin, "Monolithic Temperature Transducer," 1974 IEEE International Solid-State Circuits Conference, Digest of Technical Papers, pp. 126-127, 239.

Documents of record in Reexam Serial No. 90/003,419:

United States Patents

a	4,645,945	de Sarte	2/1987
a	4,564,769	Melamed	1/1986
	3,617,845	McKenna	11/1971
	3,996,506	Kichak	12/1976
	4,027,228	Collins	5/1977
	4,074,147	Infante	2/1978
	4,156,837	Baker	5/1979
	4,176,309	Schulz et al.	11/1979
	4,213,068	Ahmed	7/1980
	4,215,279	Lataire et al.	7/1980
	4,218,730	Marumoto et al.	8/1980
	4,220,873	Giordano	9/1980
	4,234,805	Carlsen II	11/1980
	4,254,372	Moore, Jr.	3/1981
	4,286,175	Baker	8/1981
	4,291,259	Marumoto et al.	9/1981
	4,300,081	Van Landingham	11/1981
	4,309,645	De Villeneuve	1/1982
	4,323,825	Hayes	4/1982
	4,333,120	Kotowski	6/1982
	4,337,494	Huykman	6/1982
	4,345,164	Gies	8/1982
	4,346,312	Christopherson	8/1982
	4,355,277	Davis et al.	10/1982
	4,375,073	Glogolja et al.	2/1983
	4,378,580	Stich	3/1983
	4,427,902	Hickman et al.	1/1984
	4,430,608	Nesler	2/1984
	4,441,068	Smith	4/1984
	4,442,411	Gehring	4/1984
	4,461,979	Jeenicke et al	7/1984
	4,480,201	Jaeschke	10/1984
	4,491,744	Corey	1/1985
	4,520,438	Norton	5/1985
	4,528,463	Kung	7/1985
	4,533,839	Balakrishnan	8/1985
	4,549,095	Stefani et al.	10/1985
	4,588,906	Taylor	5/1986
	4,608,524	Yokobori	8/1986
	4,645,986	Melbert et al.	2/1987
	4,695,915	Mahalek et al.	9/1987
a	4,727,264	Neidorff	2/1988
	4,749,876	Gale et al.	6/1988
	4,777,386	Majumdar	10/1988

Foreign Patent Documents

0,159,233 EPO 3/1985

Other Documents

a Knickmeyer, K. H., "Dynamic Transistor Antisaturation Control," IBM Technical Disclosure Bulletin, Vol. 17, No. 4, September 1974, pp. 1091-1092.

Bell, David A., "Designing Optimal Base Drive for High Voltage Switching Transistors," Proceedings of Powercon 7, 1980, pp. F1-1 to F1-11.

Carpenter, Ralph, "A New Universal Proportional Drive Technique for High Voltage Switching Transistors," Proceedings of Powercon 8, Power Concepts, Inc. 1981, pp. D2-1 to D2-15.

Perkinson, Joseph and Brand, Jerry, "A New Proportional Base Drive Technique Optimizes Turn Off Performance," Proceedings of Powercon 10, Power Concepts, Inc., 1983, pp. B1-1 to B1-11.

Avant, R. L., West, G. E. and Palma, R. E., "A Proportional Drive for Discontinuous Mode DC-to-DC Converters," IEEE, 1984, pp. 352-358.

Grebene, Alan. B., "Bipolar and MOS Analog Integrated Circuit Design," John Wiley & Sons, 1984, pp. 183-187.

b Ferranti, "Collector Diffusion Isolation - A New Bipolar Process for Integrated Circuits," 2nd Ed., Ferranti Ltd., 1982.

b Mammano, "Simplifying Converter Design with a New Integrated Regulating Pulse Width Modulator," Proceedings of Powercon 3, Power Concepts, Inc. 1976.

Pressman, A., "Switching and Linear Power Supply, Power Converter Design," Hayden Book Co., Inc., 1977, pp. 49-52.

Rischmueller, K., "An Improved Base Drive Method Eliminates Switching Aid Networks in Transistorized High Power Converter Circuits," Proceedings of Powercon 8, Power Concepts, Inc., 1981, pp. G1-1-1 to G1-1-9.

Shultz, Warren, "BAKER Clamps - Traditional Concepts Updated for Third generation Power Transistors," Reprinted with permission of Power Conversion International, July/Aug 1984.

a Linear Technology LT1001 Operational Amplifier, 1985.

Holland, Barney, "A New Integrated Circuit for Current Mode Control," Proceedings of Powercon 10, Power Concepts, Inc., 1983, pp. C-2-1 to C-2-7.

Rippel, Wally E., "A New Closed Loop Adaptive Base Drive Scheme Minimizes Transistor Drive and Saturation Losses," Proceedings of Powercon 11, Power Concepts, Inc. 1984, pp. G-1-1 to G-1-13.

Berger, H. H. and Wiedmann, S. K. 07/00/77, "Speed Enhancement of Saturated Transistors," IBM Technical Disclosure Bulletin, Vol. 20, No. 2, July 1977, pp. 636-637.

Bonkowski, Richard L., "A Technique for Increasing Power Transistor Switching Frequency," IEEE Transactions on Industry Applications, Vol IA-22, No. 2, March/April 1986, pp. 240-243.

Bonkowski, R. L., "A Technique for Increasing Power Transistor Switching Frequency," published by IEEE, February 1984, pp. 735-738.

Dobkin, Robert C., "IC with Load Protection Simulates Power Transistor," Electronics, February 7, 1974, pp. 119-123.

Dobkin, Robert C., "Variable Output Three Terminal Regulator," New Electronics, July 11, 1978, pp. 36 and 39.

Dobkin, Robert C., "Break Loose from Fixed IC Regulators. With Adjustable Three-Terminal Power monolithics You Get Top Performance Along with Versatility," Electronic Design, Vol. 25, No. 8, April 12, 1977, pp. 118-122.

Frederiksen, Thomas M., Intuitive IC Electronics. A Sophisticated Primer for Engineers and Technicians, 1982, pp. 78-81.

Gersbach, E. E., "Saturation Control Circuit," IBM Technical Disclosure Bulletin, Vol. 21, No. 8, January 1979, p. 3109.

Horowitz, Paul and Hill Winfield, "Transistor Saturation," The Art of Electronics, Cambridge University Press, 1993, pp. 1062-1063.

Nelson, Carl T., "Technological Advances in Monolithic Instrumentation Amplifier and Voltage Regulators," WESCON Conference Record, Vol 25, 1981, paper 19/2, pp. 1-4.

Nelson, Carl T., "Power Distribution and Regulation can be Simple, Cheap and Rugged. Self-contained 3-pin regulators are versatile building blocks that simplify many power distribution problems. Here are some useful applications," Electronic Design News, February 20, 1973, pp. 52-58.

Nelson, Carl, "New Process Boosts Current Levels of Monolithic Voltage Regulator. Bipolar IC borrows power npn structure from discrete technology to handle currents of 10A plus," Electronics, June 30, 1981, pp. 111-114.

Redl, Richard and Sokal, Nathan O., "Optimizing Dynamic Behavior with input and Output Feed-Forward and Current-Mode Control," Proceedings of Powercon 7, 1980, pp. H1-1 to H1-16.

Rischmueller, K. "Lo Power. Auto-regulated and auto-protected drives for power switching," Power Conversion International, September/October 1989, pp. 22-28.

Schultz, Warren, "Baker Clamps. Traditional concepts updated for third generation power transistors," Power Conversion International, July/August 1984, pp. 40-45.

Apathy, Anand K., and Messenger, Lawrence W., "Base Drive for High Power/Frequency PWM Transistor Inverter", IEEE, September 1985, pp. 1020-1024.

Application Note, "Designing Switching Regulators," Linear Applications, National Semiconductor, March 1969, pp. AN2-1 to AN2-12.

Documents of record in Reexam Serial No. 90/003,561:

United States Patents

c	4,218,730	Marumoto et al.	8/1980
c	4,337,494	Huykman	6/1982
c	4,286,175	Baker	8/1981
c	3,617,845	McKenna	11/1971
c	4,215,279	Lataire et al.	7/1980
c	4,309,645	De Villenvue	1/1982
c	4,441,068	Smith	4/1984
c	4,156,837	Baker	5/1979
c	4,442,411	Gehring	4/1984
c	4,533,839	Balakrishnan	8/1985
c	4,480,201	Jaeschke	10/1984

Other Documents

- c IBM Technical Disclosure Bulletin, Vol. 21, No. 8, January 1979.
- c Redl, "Optimizing Dynamic Behavior with Input and Output Feed-Forward and Current-Mode Control," Proceedings of Powercon 7, March 1980.

Note:

Several of the above patents and documents were cited more than once. Duplicate citations are marked with a note indicating the case in which the reference was first cited. Only one copy of each patent and document is enclosed with this information disclosure statement.

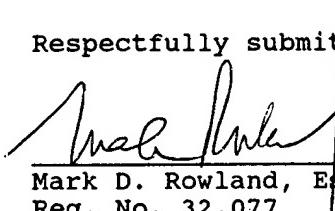
- a first cited in Application Serial No. 932,014
- b first cited in Reexam Serial No. 90/002,035
- c first cited in Reexam Serial No. 90/003,419

It is respectfully requested that the above patents and other documents be (1) fully considered by the Patent and Trademark Office during the examination of this application; and (2) printed on any patent which may issue on this application. Applicants enclose two copies of Form PTO-1449, and request that one copy of, as considered and initialed by the Examiner, be returned with the next communication.

In accordance with 37 C.F.R. § 1.97(h), applicants do not by this disclosure admit, or imply, that the foregoing references by themselves, or in combination with any other information, establish a prima facie case of unpatentability of a claim. In addition, applicants expressly reserve the right to establish invention prior to the effective date of the references cited, pursuant to 37 C.F.R. § 1.131.

An early and favorable action is respectfully requested.

Respectfully submitted,



Mark D. Rowland, Esq.
Reg. No. 32,077
Attorney for Applicant
c/o FISH & NEAVE
1251 Avenue of the Americas
New York, NY 10020
Tel.: (212) 596-9000

I hereby certify that this
Correspondence is being
Deposited with the U.S.
Postal Service as First
Class Mail in an Envelope
Addressed to: Commissioner
of Patents and Trademarks,
Washington, D.C. 20231, on
MARCH 9, 1995

Dalene Quachon-Rosen

Name of Person Signing

Dalene Quachon

Rosen

Signature of Person Signing